

not now be discussed it has never come into practical use among astronomers.

The celebrated cup anemometers, now so extensively used, are an indication of the practical skill and ingenuity by which Dr. Robinson was distinguished. The very latest scientific labour of his long life was a redetermination of the constants of the cup anemometer. This was accomplished by experiments on a very large scale, in the dome of Mr. Grubb's workshops, at Dublin. The results of these labours have been published in the *Phil. Trans.*, 1878-1880.

Considering that Dr. Robinson was an author before the battle of Trafalgar, that he was elected a Fellow before the battle of Waterloo, and that he was made director of the Armagh Observatory within a year or two of the death of Sir W. Herschel, it is not surprising to find that Dr. Robinson's scientific friends and associates belonged mainly to the past generation. In that past generation, Dr. Robinson occupied a distinguished and remarkable position. He was intimately associated with the late Earl of Rosse in all those memorable experiments which culminated in the great reflector at Parsonstown. He was the friend of Sir James South, of Sir William Fairbairn, and of many other celebrities. His wide sympathy, his gentle and invariable kindness, his wondrous stores of knowledge, his charming powers of conversation, his brilliant eloquence, were qualities universally recognised, and caused him to be welcomed and beloved in many circles besides those purely scientific.

NOTES

WE learn that Dr. Huggins obtained a photograph of the spectrum of the great nebula in Orion on the 7th inst., and that in addition to known lines, it shows a strong line in the ultra-violet.

THE death is announced, at the early age of forty-six years, of Prof. A. Freire Marreco, who filled the Chair of Chemistry in the Newcastle College of Science. Prof. Marreco had a considerable reputation as a working chemist, and did much to promote the cause of science in the north of England.

THE death is announced of Herr J. J. Sievers, the well-known astronomer, who died at Akona on February 22 last, aged seventy-seven.

AT the dinner given by the Lord Mayor on Saturday to a large number of gentlemen who have shown an interest in the Smoke Abatement Exhibition, Mr. Shaw Lefevre pointed out that we had advanced nothing in the cure of London fogs since the days of Evelyn, who gave great attention to the subject. Mr. Ernest Hart, the Chairman of the Committee, spoke of the loss by dirt and the loss by darkness, amounting to many millions, occasioned by smoke and fog; and, referring to the late exhibition, said the scientific results were most satisfying and encouraging. Many excellent inventions proved the perfect practicability of abating smoke from domestic grates, and especially from kitcheners (which were now the greatest offenders), and there was not an industry in the country which would not be benefited by an application of some one or other of the exhibits. Mr. Hart adduced some striking statistics to show the serious loss of life by the recent London fogs, and stated that during these fogs he had telegraphed to various places just outside London, and found that the weather was clear and beautiful. Surely some earnest effort will now be made to abate the serious nuisance.

IN a note on the appointment to the Edinburgh Natural History Chair, the *Spectator* of March 11 says: "There is a great, though not obtrusive, dissatisfaction in Scotch educational circles, and even beyond them, at the unprecedented delay of the Home Office in filling up the Chair of Natural History in

the University of Edinburgh, which Sir Wyville Thomson long ago resigned. The post is the academic blue riband of natural science in Great Britain. The annual emoluments, between fees and endowment, come to close upon 2000*l*. The work of the Chair is not arduous, and the occupant has the advantage of living in the most charming of provincial cities, and of being lionised by its society. Some of the most eminent biologists in the United Kingdom, including the Professors of Natural History in the three other Scotch Universities of Glasgow, Aberdeen, and St. Andrew's, are candidates for the Chair. But Lord Rosebery, with whom, as Under-Home Secretary, the appointment virtually lies, is understood all over the country—we hope falsely—to be desirous to appoint Prof. Ray Lankester, of University College, whose cause is actively championed by Prof. Huxley. Able as Prof. Ray Lankester is, we should greatly regret, in the interests of Scotland, to see the appointment of so very relentless a champion of vivisection, nay, even of a large extension of vivisection, to a Chair of influence in Edinburgh." This is a fine instance of good taste and sound judgment. If Prof. Lankester's high qualifications are recognised, Lord Rosebery is not likely to be influenced by a bye question, urged especially in such a way from such a quarter.

THE Society of Chemical Industry has proved so far successful that they have been able to begin the publication of a *Journal* intended as a "Monthly Record for all interested in Chemical Manufactures." The first number was published in January, and contains various reports connected with the Society and its branches, a paper on Artificial Indigo, by Professors Roscoe and Baeyer, and a number of interesting notes. Prof. Abel's address at the opening of the London section is of great interest as showing in a great variety of instances the intimate dependence of manufactures on success in improvement of chemical processes, and advance in chemical research. "It is, indeed, I submit," Prof. Abel said, "the special duty of this section of the Society to demonstrate, by its activity, how intimately interested in the advancement of applied chemistry, physics, and mechanics, are a large number of trades which are practised in the metropolitan area, and how closely allied to each other in regard to their interests in the development of chemical and engineering science are many trades which, to the general public or the superficial observer, would appear to have little interest in common. Certainly, in no part of Her Majesty's kingdom, I may say of the universe, can be found congregated together so great a variety of important manufacturing trades—all of them deriving direct advantage from the advance and the application of science—as exist within our metropolitan area and its immediate environs. Thus, among those whose trades, pursued in and around the metropolis, may be considered to bring them within the possible scope of activity of a society founded for the advancement of chemical industries, we have the manufacturers of definite chemical products, of drugs, and of pharmaceutical preparations, of white lead and other mineral colours, of varnishes and lacquers, of all the various products of coal-tar distillation, from creosote and pitch to dyes of the greatest beauty and purity; of manures, of cements, of candles, soaps, and lubricants; the refiners of sugar, of oils, and of metals; brewers, distillers, tanners, makers of glue and size, of pottery, stoneware, and glass, of gunpowder and pyrotechnic compositions, of waterproof goods and insulating materials. Extensive as this list is, it might probably be added to considerably." It is evident there is ample scope for the work of such a society as this, and on its present lines it is likely to do much good.

PROF. HAECKEL, of Jena, has now concluded the zoological work he was conducting on the south coast of Ceylon during two months, and has sent over fifty cases with natural history collections to Jena. His researches on the Ceylon coral reefs were

highly successful, and led to the discovery of many new species. During February Prof. Haeckel visited the mountains, and by now is probably on his way back to Jena.

THE existence in Northern Russia, and especially in the neighbourhood of St. Petersburg, of a bottom-moraine, like that which covers Sweden, Finland, North Germany, and the north of Britain, was long doubted. The researches of Prof. Inostrantzeff along the diggings of the new Ladoga canal (*Memoirs of the St. Petersburg Society of Naturalists*, vol. xii.) do not leave, however, any doubt on this subject. The Devonian rocks which appear between the rivers Syass and Svir (the geological map of Prof. Helmersen having to be modified in this respect) are covered with a thick sheet of typical bottom-moraine. It consists of a grey or reddish, unstratified and earthy mass of sand and clay containing both small rubbish and great boulders, sometimes 10 feet in diameter. The boulders consist of granite, gneiss, sandstone, and slates, these last being most numerous, and exhibiting beautiful polished and scratched surfaces. At some places the thickness of the bottom-moraine reaches 14 feet, and it is interesting to observe how the advance of the ice-sheet has folded and plaited the ends of the Devonian strata, the moraine matter being sometimes thrust between them. The washed and stratified sands which cover the bottom-moraine contain numerous remains of pre-historic man. These researches of Prof. Inostrantzeff are completely confirmed by those of M. Dokutchaeff, who has explored the ridges of sands and gravels (*osar*) on the eastern coast of the Gulf of Finland. While several of them are simple dunes, kames, or eskers, others are completely composed of typical glacial gravel (*krossstensgrus* of Swedish geologists), or of the same gravel covered with a mantle of more recent stratified sands. Both are of morainic origin.

AT a recent meeting of the Asiatic Society of Japan, says the *Japan Mail*, Prof. John Milne, of Tokio, read a paper on the *Koro-pok-guru*, or Pit-dwellers of the Island of Yezo. This name is that used by the Ainos, and means, literally, "people having depressions." According to the Aino accounts this race lived in huts built over holes, and knew the art of pottery. Mr. Milne found and examined pits on a small island near Nemuro, the north-east port of Yezo, and among the Kurile Islands. Near them were found flint arrow-heads and fragments of earthenware. The Japanese say that the pits, which are rectangular in shape, were inhabited by a race of *Kohito*, or dwarfs, which was exterminated by the Ainos. In the extreme north of the Kuriles Mr. Milne met with the aborigines of these islands dwelling in huts built over pits, which were, in general appearance, identical with the pits found farther south. In Saghalin and Kamschatka also, certain tribes dwell in pits. The general conclusion to which the writer comes is that the modern representatives of the pit-dwellers are the Kurilsky, and some of the inhabitants of Saghalin and Kamschatka, who, like the Esquimo of the Atlantic sea-board, had in former times extended much farther south. Several facts were also adduced to show that the shell-heaps of Japan were of Aino formation. Mr. Milne suggested that the hairy Ainos were connected with the hairy Papuans, who at one time extended from their present home in the south in a continuous line through the Philippines to Japan. Malay races invaded this line in the Philippines, so that all that remain of the aboriginal stock are the hairy Aeta. In Formosa, Oshima, Satsuma, and other parts of Japan, links of the hairy, large-eyed, round-faced Aino type are still to be found. The modern Japanese invaded the line from the direction of Corea, and as they exterminated or drove the Aino towards the north, the Aino in his turn pressed upon the *Koro-pok-guru*, who retreated to more northern regions, leaving behind him, as indications of his former presence, the pit-like depressions found in so many parts of Yezo. In the discussion which followed, Mr.

Satow remarked that the old Japanese chronicles indicated the presence in Eastern Japan of other tribes of barbarians besides the Ainos. He agreed with Mr. Milne's theory of an early Mongoloid immigration, which probably came by way of the Korean peninsula, and was established in the western provinces before the advent of the ancestors of the ruling family, who entered Japan from the south of Kiushiu, and were probably of Malay origin.

A SOCIETY for the study of the French language which has been established amongst the Japanese in Tokio, is about to publish a complete history of the country in French.

THE annual prize of the Russian Academy of Sciences, bearing the name of Academician Brandt, has been awarded to Prof. K. Meller, for his researches on the Russian Coal-basins. The prize of Prof. Bouniakovsky remained unawarded, few larger works of value having been published last year in Russia in the Natural Sciences Department.

IN a paper on "Ozonised Air as an Anæsthetic," by Dr. C. Binz, of Bonn, in the *Berlin Medical Journal* (1882, 1 and 2), the author brings forward a number of interesting experiments on the effect of breathing small amounts of ozone. The gas was in all instances employed mixed with air and produced by the silent discharge. The effect on small animals was very marked, first becoming somewhat quiet, and then the breathing less frequent, a state of torpor finally ensuing. No appreciable action on the heart appeared to have taken place at this stage. The bodily heat however becomes much lowered, and irritation and inflammation of the air-passages, causing vomiting, ensuing. The experiments with human beings show considerable differences in effect on individuals. Generally sleep ensued in from seven to twenty minutes, being preceded by a feeling of greater ease in breathing. The sleep was generally also very deep, being followed by a tired sensation for some minutes. The continuation of the experiments demonstrated, however, that although ozone is not by any means so irritating and destructive in its effect on delicate membranes as hitherto stated, it would be quite impossible to employ it as an anæsthetic to replace nitrous oxide.

A RICH discovery of Lacustrine relics has been made at Steckborn, on Lake Constance. They consist of flint and bone implements, pottery, bones of animals now extinct, and a quantity of wheat and oats. The relics have been placed in the Frauenfeld Museum.

DURING last year the Council of the Meteorological Society, having regard to the rapid progress of late years in statistical meteorology, and the uncertainty that still prevails regarding important questions relating to the physics of the atmosphere, considered it desirable that the Society should supplement the ordinary observations by a series of well-conducted experiments destined to throw light on such questions as the vertical decrement of temperature, the rate of ascension of vapour, the height of cloud-strata, the variation in the velocity of the wind at different elevations, &c. Steps have been taken during the past week to make observations on the first of the questions by the placing of thermometers at the summit and base of Boston Church Tower, which is 270 feet high. This tower is admirably situated for making such experiments, as it is isolated and free from any obstructions, and the ground is quite flat for miles round. By permission of the vicar, Canon Blenkin, the instruments have been placed as follows:—At the summit one of Dr. Siemens' electrical thermometers (kindly placed at the Society's disposal by Messrs. Siemens Bros. and Co.) and an ordinary thermometer are mounted in a small screen fixed to one of the pinnacles of the tower; on the roof of the belfry, which is 170 feet above the ground, a Stevenson screen has been mounted containing maximum, minimum, dry and wet bulb thermometers.

In the churchyard, another Stevenson screen has been fixed containing a similar set of thermometers, for comparison with those above. All the thermometers will be read every morning at nine o'clock. The electrical thermometer consists of a coil of wire wound round a cylindrical piece of wood inclosed in a small brass tube, a third wire is joined to one of the wires, and the three insulated by gutta-percha, form a light cable which is brought down to the base of the tower and connected to a galvanometer, the terminals of which are in connection with the two poles of a six-cell Leclanché galvanic battery. The instrument is read by depressing a key, which causes the needle of the galvanometer to deflect; a pointer or vernier (moving a contact roller upon a wire in a circular groove) is then pushed to the right or to the left upon a divided scale until the needle remains stationary on the zero point, when the electrical resistance of the wire is measured upon the scale. The number indicated by the vernier is then read off, and by referring to a table of equivalents the actual temperature in degrees of Fahrenheit is readily ascertained. Simultaneous readings of the electrical thermometer at the summit of the tower and of the dry bulb thermometer in the churchyard will be made frequently during the day by the verger of the church.

A RUSSIAN naval officer has invented a very ingenious apparatus for ascertaining the depth of the sea without the use of a costly and heavy line. Indeed, no line at all is used. The instrument consists of a piece of lead, a small wheel with a contrivance for registering the number of revolutions, and a float. While the apparatus sinks, the wheel revolves, and the registered revolutions indicate the depth. When the bottom is reached, the lead becomes detached, the float begins to act, and the machine shoots up to the surface, where it can easily be fished up by a net and the register read off.

PROF. WEGMÜLLER, the eminent Munich sculptor, is hard at work at the monument of Baron Justus von Liebig, the eminent chemist, which will be erected in the Public Gardens at the Maximilian's platz of Munich. It is of Carrara marble and over life size.

THE enterprising people of Paisley, near Glasgow, are to have a popular observatory attached to their Free Library and Museum, mainly through the liberality of Mr. Thomas Coats, who, with the assistance of Prof. Grant, of Glasgow, has not only purchased a suitable equatorial with all necessary adjustments, and a cupola, but is erecting a tower for the reception of the instrument. Similar institutions in the provinces might take a hint from Paisley.

M. DE FREYCINET, the French Minister of Public Affairs, has declared himself a candidate for the next election to the Academy of Sciences, to fill the seat vacated by M. de Bussy's recent death. His claim is grounded on the publication of books relating to engineering and the integral calculus. M. Paul Bert, the late Minister of Public Instruction is also offering himself for election, but in the section of Surgery and Medicine.

BAEYER, in continuing his investigations on indigo (*Berichte*, xv. 50), arrives at probable structural formulæ for the molecules of this compound and some of its derivatives. Some light has been thrown on chemical changes which occur in the manufacture of *yellow prussiate of potash* by the observation of Remsen (*Amer. Chem. Jnl.*, iii. 134), that a cyanide of iron is formed when iron, which has been reduced by hydrogen and organic matter, is heated with metallic sodium in an atmosphere of hydrogen.

THE *Panama Star and Herald* of Monday announces that an earthquake has occurred in Costa Rica, by which the towns of Alajuela, San Ramon, Grecia, and Heredia have been destroyed. It was at first stated that several thousand persons had perished, but according to later information, the loss has been grossly exaggerated.

FROM April 11 to 16 a Pedagogical Congress will meet at the Sorbonne, under the presidency of the French Minister of Public Instruction, who will be, as in former years, M. Ferry. The male public teachers will, as in 1881, send their delegates; but a great innovation will take place—the female teachers will for the first time enjoy the same privilege. The *Journal Officiel* has already published the programme of questions which will be discussed in this characteristic session.

MOVEMENTS of the ground appear to be now going on in the Jura. M. Girardot has lately pointed out that villages that were invisible to each other at the beginning of the century, and even thirty to forty years ago, are now visible. First the roofs appeared, then (in part) the walls. Such is the case with the villages of Doucier and Marigny, near Lake Chalain. Important changes have been observed even within ten years.

A LARGE meteorite fell at Mirotsch Planina (Eastern Servia), on February 21 last.

WE have on our table the following books:—A Monograph of the Insectivora, Systematic and Anatomical, by G. E. Dobson (Van Voorst); *Leçons sur L'Electricité et le Magnétisme*, by E. Maxart and J. Joubert (G. Masson); *The Use of Gas as a Workshop Tool*, by Thos. Fletcher, Warrington; *Contributions to Meteorology*, by Elias Loomis; *Punjab Customary Law*, 3 vols., by C. L. Tupper (Quaritch); *Geology of the Counties of England*, by W. J. Harrison (Kelly and Co.); *The Sun*, by C. A. Young (Kegan Paul and Co.); *Hesperothen*, 2 vols., by W. H. Russell (Low and Co.); *A Plea for the Rain-band*, by J. Rand Capron; *Pioneering in the Far East*, by Ludwig Verner Helms (W. H. Allen); *Ferments et Maladies*, by E. Duclaux (G. Masson); *Commercial Organic Analysis*, vol. ii., by A. H. Allen (Churchill); *Manitoba*, by Rev. G. Bryce (Low and Co.); *Electric Lighting*, 3rd edition, by Killingworth Hedges (Spon); *Blackie's Imperial Dictionary*, vol. ii.; *Preparation for Science Teaching*, by John Spanton (Griffith and Farran); *Ueber die Dauer des Lebens*, by Dr. A. Weismann (Fischer, Jena); *Die Magneto und Dynamo-elektrischen Maschinen*, by Dr. H. Schellen (Dumont-Schanberg); *Acoustics, Light, and Heat*, by N. E. William Lees (Collins); *Experimental Chemistry, Part I.*, by Prof. J. Emerson Reynolds (Longman); *Geology and Resources of the Black Hills of Dakota* (Government Office, Washington, D.C.); *Atlas to the same*; *Magnetism and Electricity*, by R. Wormell (Murby).

THE additions to the Zoological Society's Gardens during the past week include a Water Vole (*Arvicola amphibius*), British, presented by Mr. W. K. Stanley; two Common Buzzards (*Buteo vulgaris*) from Scotland, presented by Mr. W. M. Baillie; a Harrier (*Circus*, sp. inc.) from South Africa, presented by Mr. Cole; a West African Python (*Python sebae*) from West Africa, deposited; a Muscat Gazelle (*Gazella muscatensis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

VARIABLE STARS.—Prof. Julius Schmidt has published his variable-star results for 1881, which evince the same assiduity of observation as in so many years past. Seven minima of Algol were determined; the last occurred on November 27, at 11h. 8'5m. M.T. at Athens. Of Ceraski's variable U Cephei, a minimum took place May 13, at 11h. 0'2m., and one on November 26, at 9h. 4'1m.—the interval corresponding to 79 periods of 2d. 11h. 49m. 25s. A minimum of Mira Ceti (a phase of which we have comparatively few observations) occurred on March 2. χ Cygni attained a maximum July 17.0, brightness 6.5; this date is nearly three months later than the epoch assigned by Argelander's formula in the seventh volume of the Bonn Observations, as indeed has been the case for some years. For Pigott's variable R Scuti, Prof. Schmidt finds maxima at August 7.2 and October 31.2, and minima at July 4.9 and September 23.6. He has many epochs for the short-